International Civil Aviation Organization

AIDC Review Task Force Meeting

Brisbane, Australia, 27-28 March 2003

Agenda Item 2: Review of experience gained and lessons learned in the implementation of AIDC

USE OF ATS INTER-FACILITY GROUND/GROUND DATA COMMUNICATIONS (AIDC) BY AIRSERVICES AUSTRALIA

SUMMARY

This paper presents an overview of the use AIDC in the Australian FIRs since the implementation of The Australian Advanced Air Traffic System (TAAATS).

(Presented by Australia)

1. Background

1.1 Airservices Australia began using AIDC messaging during the commissioning of The Australian Advanced Air Traffic System (TAAATS) in 1998.

1.2 Initially messages were only exchanged between the TAAATS ATC centres in Melbourne and Brisbane. As other centres in adjoining airspaces have commissioned interoperability testing has been performed leading to operational use.

2. Initial Implementation

2.1 The introduction of AIDC required a moderate amount of training for Air Traffic Controllers and a significant amount of training for those managing the flight data system (System Adaptation Specialists and Flight Data Coordinators).

2.2 For initial notification Advanced Boundary Information (ABI) messages are used, followed by an Estimate (EST) message for coordination. Pre-activation (PAC) messages are used occasionally to provide early coordination for flights departing close to airspace boundaries.

2.3 Approaching the FIR boundary Transfer of Control (TOC) and Assumption of Control (AOC) messages are exchanged.

2.4 TAAATS expects a Logical Acknowledgement Message (LAM) to any transmitted AIDC message. Additionally an Acceptance (ACP) message is expected in response to a transmitted EST

message. Non-receipt of an expected response or receipt of an LRM results in an alert at the controlling sector.

2.5 Current Flight Plan (CPL), Emergency (EMG), Coordination Cancellation (MAC), Miscellaneous (MIS), Coordination (CDN) and Rejection (REJ) messages are also supported by TAAATS.

3. System Adaptation

3.1 Adaptation data can be defined and modified offline to allow for different message sending conditions for different flight scenarios using variables such as the FIR, timing, coordination point and level.

3.2 Default message sending parameters can be set for flights that do not match these specific conditions.

3.3 Message timing and data parameters are customised to support the different coordination requirements of radar and non-radar airspace. In the domestic environment, parameters are set so that ABI messages are transmitted 60 minutes before the coordination point (COP) in all cases and EST messages are sent either 30 minutes before the COP, for non-radar areas, or 15 minutes for radar areas.

4. Interface with external centres

4.1 In Mid 2000 testing commenced with Airways New Zealand with the aim of introducing AIDC messaging between Brisbane and Auckland centres and the elimination of voice coordination for routine transfers.

4.2 After successful testing and modifications to the existing Letter of Agreement (LOA), operational use of AIDC commenced. The messages exchanged between Auckland and Brisbane centres are the same as those exchanged between Brisbane and Melbourne centres, using the message timing specified in the LOA.

4.3 The transition to 'no voice coordination' was staggered so as to ensure that both centres were comfortable with the process, procedures were suitable, and that any messaging errors or unexpected events could be investigated before proceeding.

4.4 The transition process involved the receiving centre contacting the sending centre when the EST message was received and confirming the crossing conditions.

4.5 Once both centres were confident with the use of AIDC messaging, voice coordination was eliminated except in situations where AIDC messaging did not provide adequate support (e.g. Mach Number Technique, block level clearances and weather deviations).

4.6 In late 2002, Auckland and Brisbane centres participated in a trial using CDN, REJ and ACP messages to negotiate amendments to crossing conditions after the EST message has been sent. This messaging will be incorporated into operational procedures during the first half of 2003.

4.7 Airservices Australia has also performed AIDC inter-operability testing with Oakland Centre, Mauritius and Nadi centres, as well as military units under the command of the Royal Australian Air Force.

5. Lessons learned

5.1 Flight Plan database accuracy

5.1.1 The accuracy of the flight plan database must be maintained at all times. Controllers and flight data officers must ensure that the flight plan information accurately represents the cleared route and level. As the use of RVSM and RNP becomes more prevalent flight plan ancillary information accuracy is also important.

5.1.2 There have been occasions where erroneous data has been exchanged between ATSUs leading to confusion in a downstream centres' airspace.

5.2 Lead time for database or procedure changes

5.2.1 Since commencing operations with TAAATS Airservices Australia has become acutely aware of the need to allow sufficient time to inform and/or negotiate with adjacent units before implementing adaptation changes. Time must be allowed for adjacent units to consider changes, implement their own changes and perform staff training if necessary.

5.3 Procedures coordination between centres

5.3.1 Prior to exchanging 'operational' messaging with adjacent centres Airservices Australia has adopted the policy of using scripted message tests to ensure compatibility. This is typically followed by a period of 'data checking' to ensure that the information is correct and accurate. Once this process is complete operational messaging is implemented in accordance with published Letters of Agreement (LOA).

5.4 Staff training

5.4.1 Initial training of staff for AIDC was significant due to the fact that no automated messaging system was in use prior to TAAATS. Training needed to encompass basic messaging rules, messaging errors, parameters and procedures. Flight data coordinators received additional training dealing with message errors and flight plan database management. Adaptation specialists were trained on the adaptation capabilities and limitations for defining AIDC messaging conditions.

5.5 System failures

5.5.1 Procedures were required to deal with the possibility of system failures; either of TAAATS, adjacent systems or the AFTN. The workload increase associated with a failure of AIDC messaging is significant as coordination information must be manually entered, and voice coordination re-established (where applicable).

5.6 Human Factors Issues

5.6.1 It has been noted that with the removal of voice coordination controllers must compensate for the lack of prompting that voice coordination provides. Controllers must also be aware of what is being sent and when it is being sent so as to ensure that the coordination information is correct.

5.7 Reduced coordination errors

5.7.1 Operational statistics have shown that the use of AIDC messages between centres has reduced the number of coordination errors that occur. This is primarily due to the fact that information is composed and transmitted automatically.

5.8 Limitations of the AIDC ICD

5.8.1 Through the implementation of AIDC messaging with adjacent FIRs Airservices Australia has become aware of differing interpretations of some aspects of the AIDC ICD.

5.8.2 It is hoped that some of the proposed amendments to the AIDC ICD will significantly improve interoperability between adjacent centres.

6. Recommendation

6.1 States should consider the lessons learnt in this working paper prior to implementing AIDC messaging.
